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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

TIBBITS, PIA FLORENCE

ART UNIT	PAPER NUMBER
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2838

DATE MAILED: 02/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/007,273

Applicant(s)

SHELTER ET AL.

Examiner

Pia F Tibbits

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 7/8/2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5,6,9-19 is/are rejected.
- 7) ☒ Claim(s) 4,7 and 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 October 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 12/10/02 (2 PGS)
1/24/03 (2 PGS)
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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DETAILED ACTION

This Office action is in answer to the application filed 10/26/2001, and the petition granted 1/31/2003.

Priority

1. Applicant's claim for domestic priority under 35 U.S.C. 119(e) is acknowledged.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the battery temperature sensor, the integrator must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification. For example: applicant is using throughout the specification the term "firing angle", which is not clear.
4. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter: "battery temperature", "pre-loading the integrator", "particular charging current", "voltage setpoint initial value", "voltage setpoint final value", "zero charging current". The specification, for example, mentions only once that "voltage setpoint may be selected as a function of battery temperature". Applicant fails to describe the limitations recited fully and clearly, which makes it difficult to find support, as well as provide proper antecedence for all claimed limitations. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:



The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 9, and claims 11-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 9: the statement following "thereby" is not given patentable weight, since the courts held that the functional "thereby" statement does not define any structure and accordingly cannot serve to distinguish. *In re Mason*, 114 USPQ 127, 44 CCPA 937 (1957).

Claim 11: the recitation "increasing or decreasing the rectifier firing angle" is not clear, since the rectifier is activated by a signal from the second microprocessor that controls the rectifier, not an angle.

Claim 12: the recitation "switching to a different control loop includes pre-loading the integrator of the different control loop" is not clear, since the specification does not describe it.

Claim 14: the recitation "the voltage setpoint is gradually increased from an initial value to a final value." is not clear, since the specification only describes that "the (voltage) setpoint may be selected from a plurality of different values to vary the charging rate".

Claim 15: the recitation "particular charging current" is not clear, since "particular" is not a defined quantity.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by prior art disclosed by applicant, **Tzou et al.** [hereinafter Tzou][Design and Implementation of a Multiprocessor-based Uninterruptible Power Supply, April 11-14, 1988].

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Tzou discloses in fig.1 an uninterruptible power supply comprising: a controlled rectifier having an input coupled to receive AC power and an output coupled to a DC bus; a battery coupled to the DC bus; an inverter having an input coupled to the DC bus and an output coupled to a load; and a control system coupled to the controlled rectifier and the inverter, the control system comprising three microprocessors, wherein a first microprocessor functions as an overall controller, a second microprocessor controls the rectifier, and a third microprocessor controls the inverter [see also page 650 and page 655].

As to claim 2, the three microprocessors communicating via a common global memory: as shown in fig.1 all three microprocessors are part of the Digital UPS Controller, and therefore, it is an inherent function of the Digital UPS Controller and the three microprocessors, which are part of it, to share a common global memory, and MPEP 2100 states that the disclosure of a limitation may be expressed, implicit or **inherent**.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Tzou**, as described above.

Tzou discloses an uninterruptible power supply comprising: a controlled rectifier having an input coupled to receive AC power and an output coupled to a DC bus; a battery coupled to the DC bus; an inverter having an input coupled to the DC bus and an output coupled to a load; and a control system coupled to the controlled rectifier and the inverter, the control system comprising three microprocessors, wherein a first microprocessor functions as an overall controller, a second microprocessor controls the rectifier, and a third microprocessor controls the inverter. Tzou does not disclose specifically the uninterruptible power supply comprising a memory arbitration circuit including a complex programmable

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logic device programmed to allow priority-driven, non-preemptive access by the microprocessors to the common global memory. However, Tzou discloses on page 655 that on "this microprocessor system programs can run concurrently and asynchronously, which is beneficial for software development and system integration". As to claim 3, one skilled in the art would be able to program the logic, without undue experimentation, in order to allow priority-driven, non-preemptive access by the microprocessors to the common global memory.

11. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Tzou**, as described above, in view of prior art disclosed by applicant, **Fisher et al.** [hereinafter Fisher] [5920189].

Tzou discloses an uninterruptible power supply comprising: a controlled rectifier having an input coupled to receive AC power and an output coupled to a DC bus; a battery coupled to the DC bus; an inverter having an input coupled to the DC bus and an output coupled to a load; and a control system coupled to the controlled rectifier and the inverter, the control system comprising three microprocessors, wherein a first microprocessor functions as an overall controller, a second microprocessor controls the rectifier, and a third microprocessor controls the inverter. Tzou does not disclose the uninterruptible power supply further comprising a battery current monitoring circuit comprising: a current sensor 4 or 6, disposed to monitor the input current; a first amplifier circuit 44 receiving an output from the current sensor 4 corresponding to discharging battery current, amplifying it by a first factor, and outputting it to the control system; a second amplifier circuit 54 receiving an output from the current sensor 6 corresponding to a charging battery current, amplifying it by a second factor greater than the first factor, and outputting it to the control system; wherein the control system selects as its input the output of the first amplifier when the battery is discharging and the output of the second amplifier circuit when the battery is charging.

Fisher discloses in the abstract and in figures 1-7 a battery current monitoring circuit 2 comprising a current sensor 4 or 6, disposed to monitor the input current; a first amplifier circuit 44 receiving an output from the current sensor 4 corresponding to discharging battery current, amplifying it by a first factor, and outputting it to the control system; a second amplifier circuit 54 receiving an output

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from the current sensor 6 corresponding to a charging battery current, amplifying it by a second factor greater than the first factor, and outputting it to the control system; wherein the control system selects as its input the output of the first amplifier when the battery is discharging and the output of the second amplifier circuit when the battery is charging. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Tzou's apparatus and include a current monitoring circuit, as disclosed by Fisher, for the battery in order to allow a user to monitor if the measured current is below or above a predetermined level, and adjust the battery charging current accordingly.

12. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Tzou**, as described above, in view of prior art disclosed by applicant, **Wong et al.** [hereinafter Wong] [Adaptive Phase Control for Three Phase PWM AC/DC Converters with Constant Switching Frequency, 1993].

Tzou discloses an uninterruptible power supply comprising: a controlled rectifier having an input coupled to receive AC power and an output coupled to a DC bus; a battery coupled to the DC bus; an inverter having an input coupled to the DC bus and an output coupled to a load; and a control system coupled to the controlled rectifier and the inverter, the control system comprising three microprocessors, wherein a first microprocessor functions as an overall controller, a second microprocessor controls the rectifier, and a third microprocessor controls the inverter. Tzou does not disclose the uninterruptible power supply further having a three-phase input and independent zero-crossing detection circuits for each input phase, wherein the second microprocessor independently determines a phase shift introduced by each zero cross detection circuit and adjusts the firing signal timing for each rectifier phase to negate the phase shift.

Wong discloses having a three-phase input and independent zero-crossing detection circuits for each input phase to improve power factor and minimize harmonic distortion [see also pages 73-78; the abstract; fig.12]. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Tzou's apparatus and include Wong's teachings in order to allow a user to improve power factor and minimize harmonic distortion.

Tzou and Wong do not disclose that the second microprocessor independently determines a phase shift introduced by each zero cross detection circuit and adjusts the firing signal timing for each rectifier phase to negate the phase shift. However, the second microprocessor controls the rectifier in Tzou's apparatus, and therefore, it is an inherent function of the second microprocessor to independently determine a phase shift introduced by each zero cross detection circuit and to adjust the firing signal timing for each rectifier phase to negate the phase shift, and MPEP 2100 states that the disclosure of a limitation may be expressed, implicit or **inherent**.

13. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Tzou**, as described above, in view of prior art disclosed by applicant, **Wall et al.** [hereinafter Wall] [Design and Microcontroller Implementation of a Three Phase SCR Power Converter, 1996].

Tzou discloses an uninterruptible power supply comprising: a controlled rectifier having an input coupled to receive AC power and an output coupled to a DC bus; a battery coupled to the DC bus; an inverter having an input coupled to the DC bus and an output coupled to a load; and a control system coupled to the controlled rectifier and the inverter, the control system comprising three microprocessors, wherein a first microprocessor functions as an overall controller, a second microprocessor controls the rectifier, and a third microprocessor controls the inverter. Tzou does not disclose the uninterruptible power supply further having the second microprocessor implementing a phase lock loop for synchronizing rectifier firing, wherein the phase lock loop includes a finite impulse response filter on the input voltages, in order to remove low frequency harmonics from the input signal.

Wall discloses implementing a phase lock loop for synchronizing rectifier firing, wherein the phase lock loop includes a finite impulse response filter on the input voltages, thereby removing low frequency harmonics from the input signal [see also pages 619-633; the abstract; fig.12]. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Tzou's apparatus and include Wall's teachings in order to allow a user to remove low frequency harmonics from the input signal.

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Tzou and Wall do not disclose the second microprocessor implementing a phase lock loop for synchronizing rectifier firing, wherein the phase lock loop includes a finite impulse response filter on the input voltages, in order to remove low frequency harmonics from the input signal. However, the second microprocessor controls the rectifier in Tzou's apparatus, and therefore, it is an inherent function of the second microprocessor to implement a phase lock loop for synchronizing rectifier firing, wherein the phase lock loop includes a finite impulse response filter on the input voltages, in order to remove low frequency harmonics from the input signal, and MPEP 2100 states that the disclosure of a limitation may be expressed, implicit or **inherent**.

14. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Tzou**, as described above, in view of prior art disclosed by applicant, **Jung et al.** [hereinafter Jung] [Discrete Feedforward Sliding Mode Control of PWM Inverter for Sinusoidal Output Waveform Synthesis, 1994].

Tzou discloses an uninterruptible power supply comprising: a controlled rectifier having an input coupled to receive AC power and an output coupled to a DC bus; a battery coupled to the DC bus; an inverter having an input coupled to the DC bus and an output coupled to a load; and a control system coupled to the controlled rectifier and the inverter, the control system comprising three microprocessors, wherein a first microprocessor functions as an overall controller, a second microprocessor controls the rectifier, and a third microprocessor controls the inverter. Tzou does not disclose the uninterruptible power supply further having the third microprocessor implementing a nested control loop having an inner loop and outer loop, the inner loop regulating inverter current using a discrete Sliding Mode Controller, and the outer loop regulating the inverter voltage using a harmonic servomechanism controller.

Jung discloses an UPS using a nested control loop having an inner loop and outer loop, the inner loop regulating inverter current using a discrete SMC, and the outer loop regulating the inverter voltage using a harmonic servomechanism controller [see also pages 552-633; the abstract]. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Tzou's apparatus and include Jung's teachings in order to allow a user to have fast dynamic response and low Total Harmonic Distortion.

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Tzou and Jung do not disclose the third microprocessor implementing a nested control loop having an inner loop and outer loop, the inner loop regulating inverter current using a discrete SMC, and the outer loop regulating the inverter voltage using a harmonic servomechanism controller. However, the third microprocessor controls the inverter in Tzou's apparatus, and therefore, it is an inherent function of the third microprocessor to implement a nested control loop having an inner loop and outer loop, the inner loop regulating inverter current using a discrete SMC, and the outer loop regulating the inverter voltage using a harmonic servomechanism controller, and MPEP 2100 states that the disclosure of a limitation may be expressed, implicit or **inherent**.

15. Claims 11, 13, 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over prior art disclosed by applicant, **El-Bakry et al.** [hereinafter **El-Bakry**] [An UPS with Proper Crest Factor and Efficiency for Computer Loads, 1997] in view of prior art disclosed by applicant, **Fisher**, as described above.

El-Bakry discloses an UPS controlling the output current of a controlled rectifier having its output connected to a DC bus with a battery/load coupled to the bus; sensing the DC bus voltage; comparing the sensed voltage to a voltage setpoint, and modifying the rectifier output waveform to minimize a difference between the sensed voltage and the voltage setpoint [see also pages 1726-1731; the abstract]. El-Bakry does not disclose determining whether an input current of the rectifier or a charging current of the battery is above a predetermined limit, and switching control to a different control loop to maintain the input current or the charging current within the predetermined limit.

Fisher discloses in the abstract and in figures 1-7 a battery current monitoring circuit 2 comprising a current sensor 4 or 6, disposed to monitor the input current; a first amplifier circuit 44 receiving an output from the current sensor 4 corresponding to discharging battery current, amplifying it by a first factor, and outputting it to the control system; a second amplifier circuit 54 receiving an output from the current sensor 6 corresponding to a charging battery current, amplifying it by a second factor greater than the first factor, and outputting it to the control system; wherein the control system selects as its input the output of the first amplifier when the battery is discharging and the output of the second

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amplifier circuit when the battery is charging. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify El-Bakry's UPS and include a current monitoring circuit, as disclosed by Fisher, for the battery/load in order to allow a user to monitor if the measured current is below or above a predetermined level, and adjust the battery charging current accordingly.

As to claim 13, El-Bakry discloses that the UPS configuration proposed is more suitable for computer systems, the computer systems being non-linear loads [see also page 1726].

As to claim 15, as best as it can be understood at this time, El-Bakry and Fisher disclose an UPS including a current monitoring circuit for the battery/load in order to allow a user to monitor if the measured current is below or above a predetermined level, and adjust the battery charging current accordingly.

As to claim 16, the voltage setpoint being selected from one of a higher value to accomplish faster charging or a lower value to accomplish slower charging: it is an inherent function of El-Bakry's and Fisher's UPS charger controller to continuously monitor the battery charging current in order to increase or decrease the charging speed, and MPEP 2100 states that the disclosure of a limitation may be expressed, implicit or **inherent**.

As to claim 17, El-Bakry and Fisher disclose the claimed invention except for the voltage setpoint being selected to cause zero charging current to flow into said battery. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide a selection for the optimum charging current, since it has been held that discovering an "optimum" or "preferred" value for a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

With respect to the method claims 11, 13, 15-17: the method steps will be met during the normal operation of the apparatus described above.

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16. Claim 18, as best as it can be understood at this time, is rejected under 35 U.S.C. 103(a) as being unpatentable over prior art disclosed by applicant, **El-Bakry and Fisher**, as described above, further in view of **Gottlieb et al.** [hereinafter **Gottlieb**] [6274950].

El-Bakry and Fisher disclose an UPS controlling the output current of a controlled rectifier having its output connected to a DC bus with a battery/load coupled to the bus; sensing the DC bus voltage; comparing the sensed voltage to a voltage setpoint, and modifying the rectifier output waveform to minimize a difference between the sensed voltage and the voltage setpoint; determining whether an input current of the rectifier or a charging current of the battery is above a predetermined limit, and switching control to a different control loop to maintain the input current or the charging current within the predetermined limit. El-Bakry and Fisher do not disclose the voltage setpoint selected as a function of battery temperature.

Gottlieb discloses in the abstract an uninterruptible power supply ("UPS") system using battery packs to provide back-up power for the UPS system; information about the battery packs is collected by a monitor associated with each of the battery packs, which monitors measurements of battery pack voltage, currents and temperature and compile information about the battery pack from the measured values. Each monitor prepares a data word-representing information about its battery pack. The data words are transmitted to the UPS in response to commands issued by the UPS processor to the monitors. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify El-Bakry's and Fisher's apparatus and include battery temperature monitoring, as disclosed by Gottlieb, in order to avoid a temperature-dependent irreversible deterioration of the battery.

17. Claim 19 is rejected under 35 U.S.C. 103(a) as being prior art disclosed by applicant, **Martins et al.** [hereinafter **Martins**] [A Control Method for High Power UPS's in Parallel Operation, 1995] in view of prior art disclosed by applicant, **Jung**, as described above.

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Martins discloses a plurality of uninterruptible power supplies in parallel comprising: adjusting a phase angle of a voltage generated by each uninterruptible power supply to eliminate real power unbalances among the plurality of uninterruptible power supplies; adjusting a magnitude of a voltage generated by each uninterruptible power supply to eliminate reactive power unbalances among the plurality of uninterruptible power supplies/using inverters from the same manufacturer that have the same characteristics [see also pages 208-211]. Martins does not disclose shifting a location of a harmonic servo compensator pole to reduce the bandwidth of the controller for each harmonic.

Jung discloses an UPS shifting a location of a harmonic servo compensator pole to reduce the bandwidth of the controller for each harmonic by using a nested control loop having an inner loop and outer loop, the inner loop regulating inverter current using a discrete SMC, and the outer loop regulating the inverter voltage using a harmonic servomechanism controller [see also pages 552-633; the abstract]. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Martins's apparatus and include Jung's teachings in order to allow a user to have fast dynamic response and low THD.

With respect to the method claim 19: the method steps will be met during the normal operation of the apparatus described above.

18. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Allowable Subject Matter

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19. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

With respect to claim 4: none of the references of record prior to applicant's filing date discloses, teaches, or suggests an uninterruptible power supply comprising, *inter alia*, a plurality of components interconnected by a peer-to-peer controller area network, wherein the network accommodates fragmented messaging.

20. Claims 7 and 8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

With respect to claims 7 and 8: none of the references of record prior to applicant's filing date discloses, teaches, or suggests an uninterruptible power supply having, *inter alia*, the second microprocessor configured to change the firing sequence of the rectifier to compensate for a phase rotation of the three-phase input, and qualifying the input voltage by measuring the voltage on a first phase of said three-phase input, the frequency on a second phase of said three-phase input, and the phase sequence between either said first phase or said second phase and a third phase of said three-phase input.

Conclusion

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure, as best as it can be understood at this time. The prior art cited in PTO-892 and not mentioned above disclose related apparatus, as best as it can be understood at this time.

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Pia Tibbits whose telephone number is (571) 272-2086. If unavailable, contact the Supervisory Patent Examiner Mike Sherry whose telephone number is (571) 272-2084.

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23. Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center receptionist whose telephone number is (571) 272-2800.

Papers related to Technology Center 2800 applications only may be submitted to Technology Center 2800 by facsimile transmission. Any transmission not to be considered an official response must be clearly marked "DRAFT". The faxing of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Technology Center Fax Center number is (703) 872-9306.

PFT

February 3, 2004

A handwritten signature in black ink, consisting of a large, stylized 'O' followed by a smaller, more complex mark that resembles a 'P' or a similar character.